REMARKS/ARGUMENTS

Examiner's ruling with respect to the restriction of claims has been duly noted. Claims 7 - 32 have, accordingly, been canceled. Divisional applications will be filed at the appropriate time.

Reconsideration is requested of all rejections based on objections to the abstract:

A new abstract (along the lines suggested by examiner) has been provided.

Reconsideration is requested of all rejections based on objections to the title:

A new title (as suggested by examiner) has been provided.

Reconsideration is requested of all rejections based on objections to the claims:

The informalities in claim 1 have been corrected as directed by examiner.

Reconsideration is requested of all rejections based on 35 U.S.C. 112:

Examiner's point regarding our imprecise way of referring to "removed portions" in claim 1 is well taken. We have, accordingly, amended claim 1 so as to remove any ambiguities. Examiner is thanked for bringing this to our attention.

With regard to claim 6, "a signal strength of X %" is a term of art widely used by practitioners of the magnetic read head art and understood by them to mean a change of X percent in the value of current passing through the device when the direction of magnetization of the free layer is reversed. See, for example [0067] of Hasegawa. We do, however, understand examiner's desire to make issued patents less esoteric and have therefore amended claim 6 to reflect this.

Reconsideration is requested of all rejections based on 35 U.S.C. 103:

Examiner has rejected claims 1-6 as being unpatentable over Hasegawa 2002/0024775 in view of Hayakawa 6,252,749.

Regarding claim 1, examiner has summarized Hasegawa as follows:

"... discloses a method comprising: providing a GMR stack (e.g. layers 5, 7) having on a top surface of the GMR stack, a bias cancellation layer (e.g. 10, in Fig. 7) located between opposing hard magnetic layers (e.g. 32); and removing portions of the bias cancellation layer with a remaining portion of the bias cancellation layer extending a distance from the hard magnetic layers (see sequence of Figs. 8 to 9)."

We believe this summary of Hasegawa's process is incorrect for the following reasons:

(1) Hasegawa's structure is a dual spin valve i.e. top and bottom spin valves that share a common free layer (layer 7b). Hasegawa's layer 10 is not a bias cancellation layer. Rather it is the antiferromagnetic layer of Hasegawa's top spin valve. Together with ferromagnetic layer 9c and AFM coupling layer 9b, layer 10 serves to magnetically

pin layer 9a thereby causing spin polarization of the electrons that pass through spacer layer 8 on their way to free layer 7b.

(2) In order to work, Hasegawa's structure requires the presence of layer 10 even if there are no biasing magnets. When the latter are present, layer 10 has no effect on the bias superimposed on the free layer by the bias magnets since no exchange coupling between it and the free layer is possible.

(3) As Hasegawa himself explains [0186], the advantage gained by reducing the width of the top spin valve is a reduction in shunt resistance, not bias compensation.

Regarding claim 2, examiner states that "Hasegawa further teaches that the bias cancellation layer comprises an antiferromagnetic layer on an exchange dilution layer (paragraph [0159])".

This is incorrect. In [0159] Hasegawa merely notes that his two antiferromagnetic layers should comprise alloys of Mn or PtMn. No mention is made of an exchange dilution layer. In fact, both layers 9c and 5a (which are in immediate contact with AFM layers 10 and 4, respectively) are ferromagnetic layers which will facilitate, not dilute, AFM coupling.

Further regarding claim 1, examiner notes that Hasegawa "does not teach covering the magnetic layers and remaining portions of the bias cancellation layer with a layer of insulation where current that flows through the device is constrained to flow through the central area of the device (as required at lines 6-7 of Claim 1)."

Examiner then argues that "Hayakawa discloses a process that includes covering

hard magnetic layers (e.g. 4 in Fig. 1) and remaining portions of a bias cancellation layer (e.g. 16) with a layer of insulation (e.g. gap insulation layer 6) for the purpose of enhancing thermal conductivity while maintaining insulation properties of the device (see col. 8, lines 4-8)."

We are grateful to examiner for this citation as it has uncovered an error in the wording of lines 6-7 of our claim 1. As now amended, said lines read as follows:

"covering **only** said magnetic layers and all areas from which said portions were removed with a layer of insulation whereby current through said device is constrained to flow through a central area of said device".

No new matter is involved as the new version is the correct verbalization of the process step represented by the transition from FIG. 8 to FIG. 9. As can be seen, insulating layer 91 covers only the magnetic layers 43 and those areas from which a part of layer 21 was removed.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

GEO. O. SAILE & ASSOCIATES
28 Davis Avenue
Poughkeepsie
NY 12603

By 

Stephen B. Ackerman
Reg. No. 37761